

CLAIMS

- 1 1. Apparatus for sensing spark in an igniter in a gas turbine
2 engine, comprising:
 - 3 a) a holder into which the igniter is inserted;
 - 4 b) a coil mounted in the holder; and
 - 5 b) a detector for detecting current in the coil.
- 1 2. Apparatus according to claim 33, wherein said holder
2 reaches a temperature of 175 F or greater during normal operation
3 of the engine.
- 1 3. Apparatus according to claim 1, wherein the coil is in
2 thermal contact with the igniter.
- 1 4. Apparatus according to claim 1, wherein said holder is
2 conductive and held at a system ground.
- 1 5. Apparatus according to claim 2, wherein no electrical
2 current passing through the igniter enters the coil.
- 1 6. Apparatus according to claim 1, wherein (1) a cable runs
2 from an exciter to the igniter, (2) the cable delivers electrical
3 power to the igniter, (3) an external conductive shield surrounds
4 the cable and is connected to the engine, and (4) the cable
5 connects to the igniter at a contact point, and a second conductive

6 shield extends from the contact point along the igniter, and
7 wherein

8 d) the coil is wholly external to both conductive
9 shields.

1 7. Apparatus according to claim 1, wherein part of the
2 igniter forms a core of the coil.

1 8. Apparatus according to claim 6, wherein the second
2 conductive shield comprises a housing of the igniter.

1 9. Apparatus for attaching an igniter to a gas turbine
2 engine, comprising:

3 a) a base containing a threaded bore, into which bore
4 the igniter can be threaded;

5 b) holes in the base through which fasteners can fasten
6 the base to the engine; and

7 c) a coil affixed to the base, for detecting currents
8 in the igniter.

1 10. Apparatus for attachment to an igniter for a gas turbine
2 engine, the igniter having (1) a proximal end, (2) a casing at the
3 proximal end, the casing having a cross sectional shape S, and (3)
4 an electrical connector at the proximal end, the apparatus
5 comprising:

6 a) a housing having an internal aperture matching shape

7 S, so that the housing fits about the proximal end;
8 b) within the housing,
9 i) an inductive pick-up, and
10 ii) an amplifier which amplifies signals
11 produced by the pick-up.

1 11. Apparatus according to claim 10, wherein the inductive
2 pick-up is in thermal contact with the casing, when the housing is
3 fitted about the proximal end.

1 12. Apparatus according to claim 10, wherein the amplifier
2 comprises an RLC amplifying circuit.

1 13. Apparatus according to claim 12, wherein the igniter is
2 powered by non-sinusoidal voltage pulses of frequency F , with each
3 pulse having a duration D , and the RLC resonant circuit is resonant
4 to sinusoidal steady-state excitation of a frequency $1/2D$.

1 14. Apparatus according to claim 13, wherein the non-
2 sinusoidal voltage pulses are substantially triangular.

1 15. Apparatus according to claim 13, and further comprising
2 a ring of high permeability material which surrounds the igniter
3 when the housing is fitted to the igniter, and a magnetic field
4 produced by current passing through the connector travels through
5 both the high permeability material and the inductive pick-up.

1 16. Apparatus, comprising:
2 a) an igniter for a gas turbine engine;
3 b) an inductive pick-up adjacent the igniter; and
4 c) an amplifier having no active elements, which
5 amplifies signals produced by the pick-up.

1 17. Apparatus according to claim 16, wherein the pick-up
2 produces signals when the igniter produces sparks.

1 18. Apparatus according to claim 16, wherein the amplifier
2 comprises an RLC resonant circuit.

1 19. Apparatus according to claim 18, wherein the igniter is
2 powered by non-sinusoidal voltage pulses of frequency F , with each
3 pulse having a duration D , and the RLC resonant circuit is resonant
4 to sinusoidal steady-state excitation of a frequency $1/2D$.

1 20. Apparatus according to claim 16, wherein the amplifier
2 contains no active elements.